

PVC/Chlor-Alkali Business

Business Overview

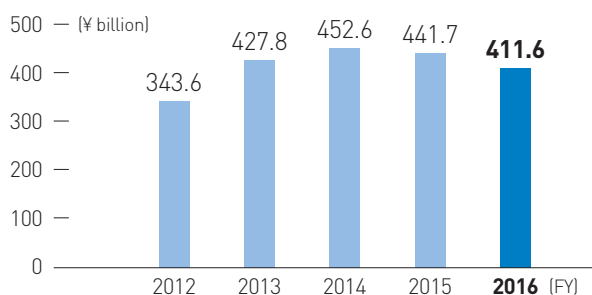
Polyvinyl chloride resins (PVC) are general-purpose resins used in a wide range of applications, from everyday products to all kinds of industrial materials. This is one of the Group's core businesses. In 1960, the Group became the first Japanese chemical manufacturer to establish a polyvinyl chloride manufacturing base overseas (Portugal). In 1973, Shintech was established in the United States. Shintech has grown into the world's largest manufacturer of PVC through continuous large-scale capital investments. In 1999, Shin-Etsu PVC was established in the Netherlands via a business acquisition, and furthermore, other efforts to proactively promote international expansion were proceeded. With annual production of 4.15 million tons, the Group is the world's largest maker of PVC, providing a stable supply of superior materials to customers around the world.



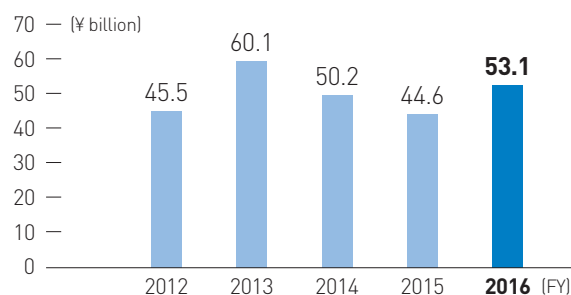
Resolving Social Issues through Products

PVC is made using petroleum and salt, with petroleum accounting for 40% of raw materials used. Compared to other general-purpose resins, the merits of PVC include a low dependence on petroleum resources, placing a relatively small burden on the environment. The process of manufacturing PVC from raw materials uses only 60% of the energy required to make other general-purpose resins. Highly durable and easy to recycle, PVC is used for a wide range of social infrastructure materials, including window profiles, water and sewer pipes, construction and civil engineering.

Net Sales



Operating Income

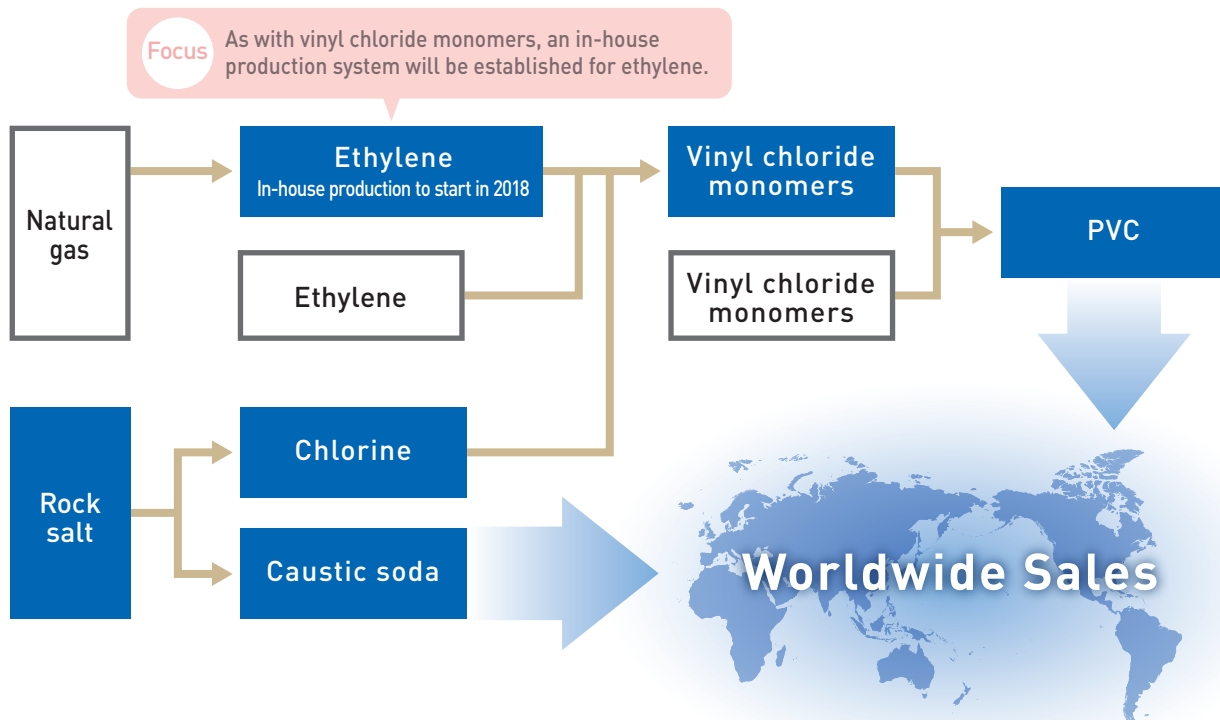


- Because Shintech in the U.S., making good use of its expanded production capacity, realized sales growth that surpassed that of the industry both within and outside of North America, it achieved a double-digit profit increase. Shin-Etsu PVC in Europe continued steady operation, and its shipments continued to be firm. The PVC business in Japan increased its sales volume both within Japan and outside of Japan and improved its profit.

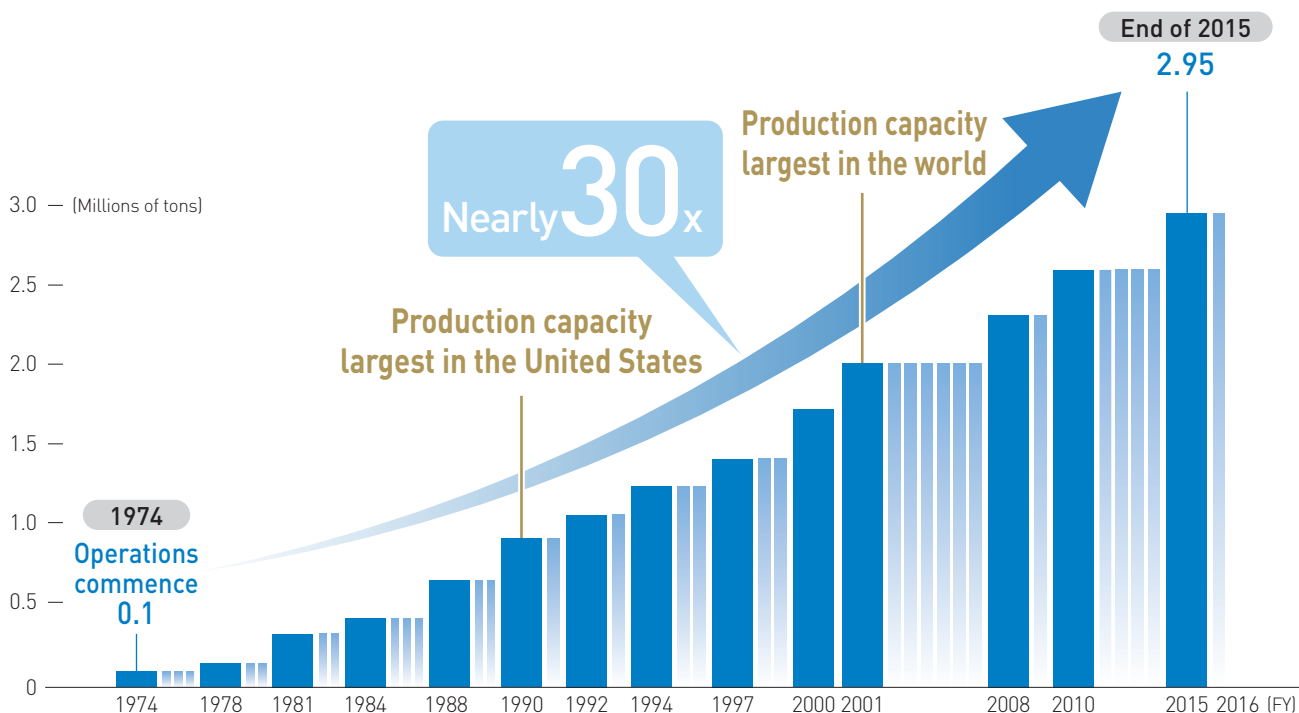
Shintech's Integrated Production Facilities

Integrated Production to Begin with Raw Materials

■ In-House Production □ External Procurement



Shintech PVC Production Capacity



PVC/Chlor-Alkali Business

Main Products and Applications

PVC

PVC pipes and conduits

A backbone material supporting lifelines



Window profiles

Used for thermal insulation, sound insulation and superior condensation prevention, PVC window profiles are attracting attention as a construction material that conserves energy and creates a comfortable residential environment.



Plastic greenhouses for agriculture

An excellent flame retardant that is easy to recycle, plastic greenhouses for agriculture use a resource-saving material boasting a recycling rate of more than 50%.



Siding materials

This is a lightweight, easy-to-install exterior material for a house. In addition to superior weather and impact resistance, this material provides excellent protection against rust and corrosion.



Electric line coating material

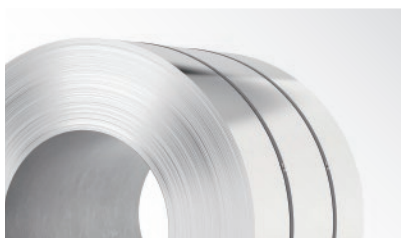
With excellent insulation properties, PVC coating is used for a variety of high- and low-voltage lines.

Caustic Soda



Paper and pulp

Caustic soda is used for digesting and bleaching wood chips in the dissolved pulp manufacturing process.



Wastewater treatment

Caustic soda is used as a neutralizing agent for acidic wastewater due to its strong alkaline properties.



Alumina

Aluminum hydroxide, made by dissolving bauxite with caustic soda, is a raw material for alumina (aluminum oxide).



Soaps and detergents

Caustic soda reacts with fats and oils to become a raw material for soap or a raw material for synthetic detergents.

Semiconductor Silicon Business



Business Overview

The Shin-Etsu Group is engaged in large-diameter and ultra-flat technological innovations as the world's leading provider of silicon wafers for integrated circuits. We successfully achieved early mass production of 300-mm wafers and SOI wafers* utilizing the world's highest level of proprietary single crystallization technologies, advanced processing technologies and quality control technologies. We have also promoted overseas operations, with local subsidiaries established in the

United States, Malaysia, the United Kingdom and Taiwan, which provide a stable supply of high-quality products. We are also engaged in the integrated production of gallium phosphide (GaP), gallium arsenide (GaAs) and other compound semiconductor crystals mainly as a material used in light-emitting diodes, from compound semiconductor crystals to chips.

*SOI: Silicon on Insulator. Wafer with a structure having an insulating oxide film directly under a silicon active layer. A material suitable for high-speed LSI, low-power consumption LSI, sensors, power devices and other cutting-edge devices.

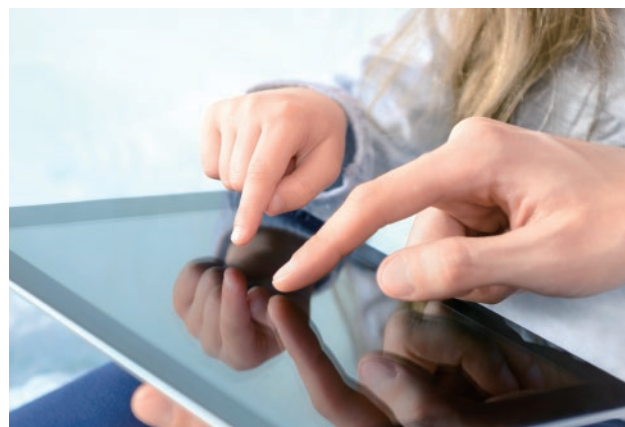
Resolving Social Issues through Products

As a basic material supporting our modern high-speed information society, silicon wafers contribute to society by reducing the size and weight of electronic equipment, reducing power consumption, improving automobile fuel efficiency, driving support systems and other safety controls and medical equipment advancements. Furthermore, they are useful for the

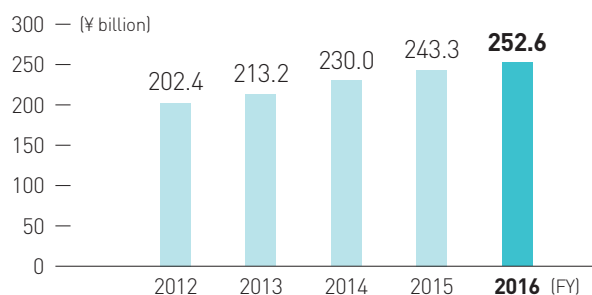
stable supply of electric power mainly to electronic equipment, as power semiconductors can minimize power consumption and accommodate high voltage and high currents. Group products are also used to accurately regulate motor drive controls from high to low speeds and as power-saving transistors enabling the efficient transfer of power from generators to transmission lines.

Main Products and Applications

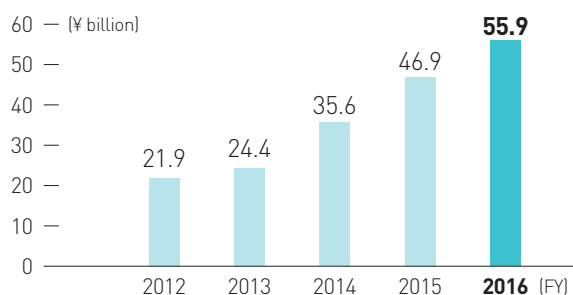
Products	Applications
Various types of silicon wafers	Electrical components for digital equipment and automotive parts Used as a substrate material for semiconductor devices in electronic devices such as personal computers, smartphones and televisions as well as automobiles.
Compound semiconductor products	LED components Used in a wide range of applications including outdoor displays, traffic lights, in-vehicle stop lamps, sensor light sources, etc.



Net Sales



Operating Income



► Together with applications for memory devices continuing to be firm, shipments of logic devices also did well, supported by demand in a wide range of fields for applications such as for smartphones.

Silicones Business



Business Overview

Since becoming the first Company to commercialize silicones in Japan in 1953, the Group has captured more than a 50% domestic share through strong technological capabilities and detailed support for market needs. Currently, the Company offers more than 5,000 varieties of

silicone products used in a wide range of industries, including electric and electronic applications, automobiles, construction, cosmetics, chemicals and food. Furthermore, the Group's advanced technological capabilities in silicon chemistry enable us to provide high-value-added products.

Resolving Social Issues through Products

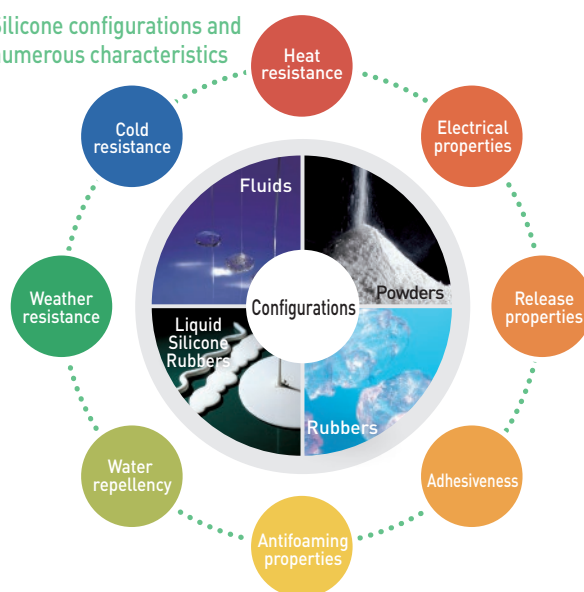
Using silicones has the effect of reducing greenhouse gases emission. It is estimated that the effect is nine times as large as the emission volume of silicone production and waste disposal, according to a study commissioned by the Global Silicones Council in 2012. Among these, the use of silicones for automobile, construction and solar battery

applications account for a large proportion of greenhouse gas emission reductions from the silicone product cycle. This constitutes a substantial contribution toward the realization of an environmentally friendly and sustainable society.

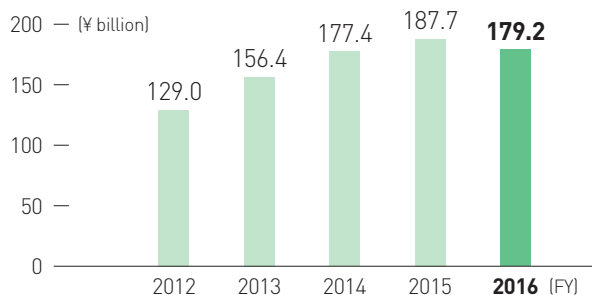
Main Products and Applications

Products	Applications
Silicones	Cosmetic ingredients Enhances the usability of cosmetics by preventing the smearing due to sweat and sebum.
	Electronic device thermal interface materials Enables efficient dissipation of heat generated by electronic devices.
	Contact lens materials Uses silicone to allow oxygen permeability.
	Building sealant Used as a building sealing material for buildings and houses.

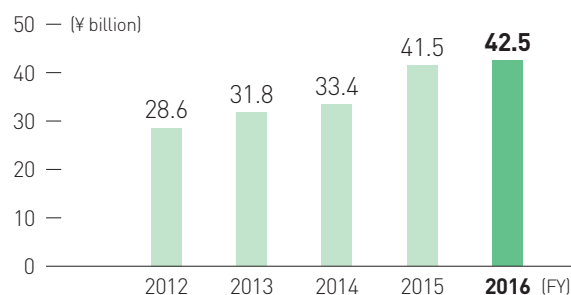
Silicone configurations and numerous characteristics



Net Sales



Operating Income



► In Japan, shipments of product applications for cosmetics and on-board automobiles continued to do well. Globally, although general-purpose products were affected in the first half of the fiscal year by sluggish market prices, shipments of functional products for the United States, China and Southeast Asia were firm.

Electronics and Functional Materials Business

Business Overview



The Shin-Etsu Group's rare earth magnets are used in a wide range of applications including automobile motors, industrial robots, home appliances and hard disk drives. We also develop and provide photoresists, photomask blanks, encapsulation materials and pellicles which are used in the semiconductor manufacturing process. We have also successfully launched the world's first mass production

of synthetic quartz products, used as a substrate for photomasks. Furthermore, we successfully developed liquid fluoroelastomers.*

* Employs silicone addition reaction technology, and hardens into a flexible solid synthetic rubber upon heating. Offers outstanding functionality and processability, and far more resistant to cold, oil, solvents and chemicals than conventional products. This material is expected to be applied in a wide range of fields, from automobiles and aircraft to electronic equipment and optical applications.

Resolving Social Issues through Products

Rare earth magnets have about 10 times the magnetic force of conventional ferrite magnets. Even small rare earth magnets generate a powerful magnetic field. They are used in hybrid and electric cars to realize smaller size and weight as well as

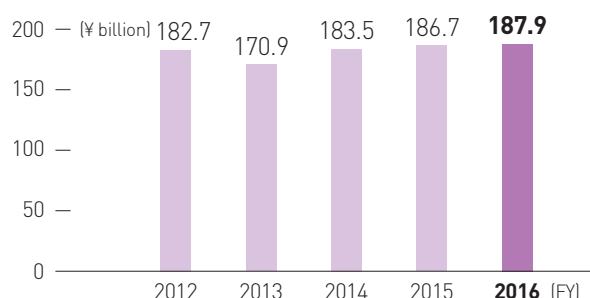
the increased power regeneration. Rare earth magnets are also used in compressors for energy-saving air conditioners. They raise electric power efficiency in a variety of products and contribute to the reduction of greenhouse gas emissions.

Main Products and Applications

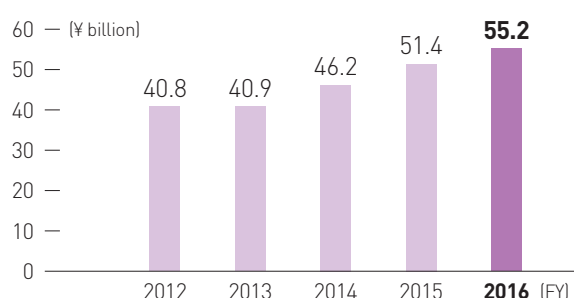
Products	Applications
Rare earth magnets	Various types of motors Used in automobiles, air-conditioner compressors, wind power generators, industrial robots, hard disk drives for digital consumer electronics, etc.
Encapsulation material	Semiconductor and LED device encapsulation Protects semiconductor and LED devices from severe environment for reliable operation.
Photoresists	Photosensitive material used to write semiconductor circuits Used as a photosensitive material when transferring semiconductor circuit patterns onto a silicon wafer.

Products	Applications
Photomask blanks	Pattern master used to write semiconductor circuits A pattern master with a light-shielding thin film formed on a synthetic quartz substrate used when transferring semiconductor circuit patterns.
Liquid fluoroelastomers	Antifouling coating Used on smartphone cover glass or eyeglass lenses to repel water and oil, making it easier to wipe off fingerprints and other impurities.
Optical fiber preforms	Optical fiber A synthetic quartz preform with excellent optical transparency is processed into a single optical fiber with a length of approximately 5,000 km (diameter: 200 mm, length: 2,000 mm).

Net Sales



Operating Income



► With regard to the rare earth magnets business, although products for hard-disk drives were slow, products for applications in automobiles were firm, including those for hybrid and electric vehicles. As for the photoresist products business, ArF resists and trilayer materials continued to perform steadily and photomask blanks had good shipments. Although the business of materials for LED packaging was affected by production adjustments made by some customers, optical fiber preform continued to have firm shipments.

Specialty Chemicals Business



Business Overview

Our main specialty chemical products are cellulose derivatives, environmentally friendly materials made from natural polymer cellulose. The Shin-Etsu Group began manufacturing cellulose derivatives in 1962. Currently, we have the largest share in Japan and meet global needs as the world's foremost manufacturer

with bases in Japan, Europe and the United States. In addition, we provide synthetic pheromones used for agricultural pest control and functional resin POVAL. We also provide a variety of other products, including silicon metal, a main ingredient in silicones and synthetic quartz.

Resolving Social Issues through Products

Industrial cellulose derivatives reduce the separation of concrete in water, enabling concrete to be poured without polluting water. This contributes to environmental preservation by preventing water pollution. Synthetic pheromones are very safe,

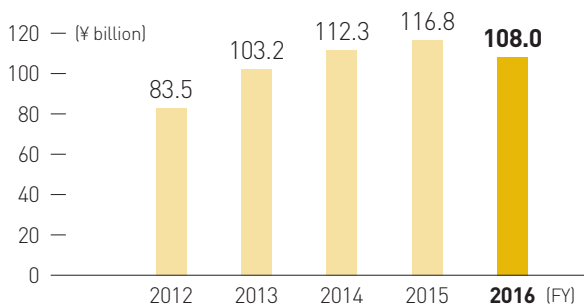
environmentally friendly and eliminate agricultural pests. They are useful for making food safer through the reduction of insecticides and agricultural chemicals sprayed in fields.

Main Products and Applications

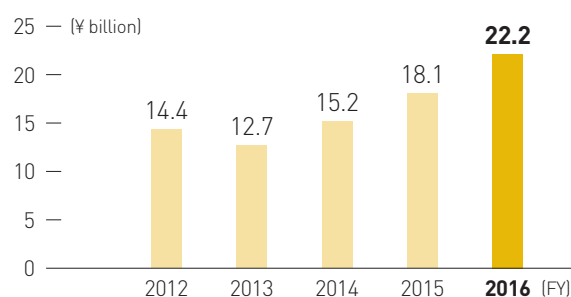
Products	Applications
Cellulose	Drug tablet coating and binder Enables a variety of functions including control of where medicine melts inside the body, how quickly the medicine melts, etc.
	Automobile exhaust gas purifying device binder Used as a binder that helps mold automobile exhaust gas purification equipment that contributes to the prevention of global warming.
Synthetic pheromones	Agricultural and grain-storage pest control Artificially synthesized pheromones that inhibit mating by disturbing signals between male and female agricultural pests.

Products	Applications
Silicon metal	Materials of silicone, semiconductor silicon, synthetic quartz Produced by Simcoa Operations in Australia http://simcoa.com.au/
POVAL	Adhesives, various films, fiber treatment agents, paper processing agents, etc. POVAL, manufactured and sold by Japan VAM & Poval Co., Ltd., leverages the characteristics of water-soluble synthetic resin, and in addition to the above applications, is used as additives for cosmetics, pharmaceuticals, etc. http://www.j-vp.co.jp/english/index.html
Solbin®	Adhesives, paints, etc. Modified resins with excellent adhesion and solubility provided by Nissin Chemical Industry Co., Ltd. Used for paints, inks, adhesives, etc. http://www.nissin-chem.co.jp/english/

Net Sales



Operating Income



► With regard to cellulose derivatives, in Japan, although sales of construction materials products were slow, shipments of pharmaceutical-use products continued to do well. The business of SE Tylose in Europe continued to be steady on the whole for coating products and construction materials products. Shipments were firm in the silicon metal business of Simcoa Operations in Australia, although it was affected by a decline in market prices.

Processing, Trading & Specialized Services Business

Business Overview

Shin-Etsu Polymer Co., Ltd., develops and supplies highly operable and functional products making use of materials processing technologies. Shin-Etsu Engineering Co., Ltd.,

involved in the design and construction of the Group's product manufacturing plants, has a strong reputation for engineering with customers.

Resolving Social Issues through Products

The construction material (corrugated rigid polycarbonate sheets) manufactured by Shin-Etsu Polymer Co., Ltd., is used

as an exterior roofing material. Using more than 50% reclaimed raw materials, this product contributes to recycling.

*The name of this business segment was changed from the previous name of "Diversified Business" to "Processing, Trading & Specialized Services Business" in FY2016. This change was made in order to make clearer the contents of this business segment. There is no change in the products and services that come under this business segment.

Main Products and Applications

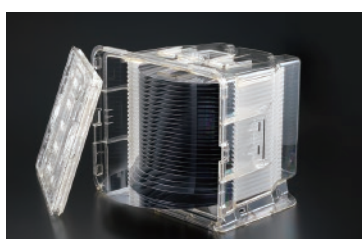
Input devices

Providing input devices such as automobile dashboard audio and air conditioners.



Various rollers for OA equipment

Providing semi-conductive developing rollers and fuser rollers making use of proprietary processing technologies including conductivity, foaming and compositing using silicone rubber.



Wafer containers

Providing containers used for transportation from silicon wafer makers to device makers and silicon wafer transport containers within the device manufacturing process.



Shupua

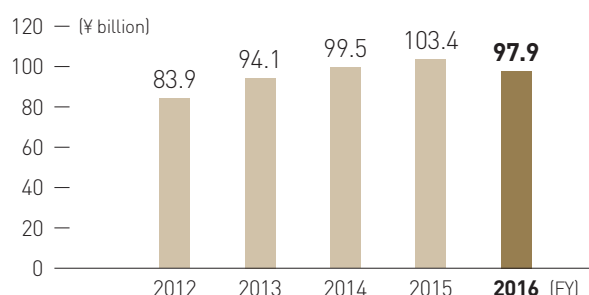
Glasses made of high transparent silicone rubber.



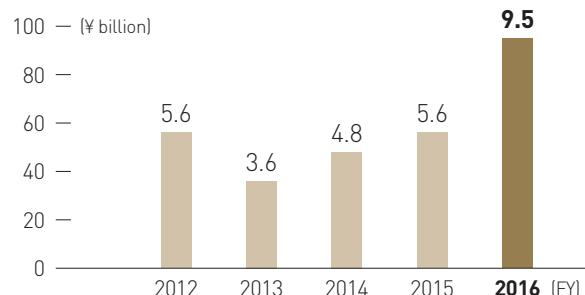
Engineering

The engineering business of Shin-Etsu Engineering Co., Ltd. is involved in the design, construction and maintenance of various Shin-Etsu Group product manufacturing plants.

Net Sales



Operating Income



► Shin-Etsu Polymer Co., Ltd.'s business of input devices for automobiles and semiconductor wafer-related containers continued to do well.